POTATO CULTURE (IRELAND).

RETURN to an Order of the Honourable The House of Commons,
dated 9 November 1882;—*for*,

COPY "of Reports furnished with regard to Experiments on Potato Culture made in *Ireland* during the Year 1882; also on any Experiments contemplated for 1883."

Office of National Education, Dublin,
29 November 1882.

JOHN E. SHERIDAN,
Secretary.

REPORT of Mr. Thomas Carroll, Agricultural Superintendent.

POTATO EXPERIMENTS.

Albert Institution, Glasnevin,
Dublin, October 1882.

Gentlemen,

I beg to report, for the information of the Commissioners of National Education, that during the present year 1882 the following has been the procedure in pursuance of instructions from your office relative to potato experiments:—

I.—*At the Albert Institution.*

(a.) A series of experiments on the comparative productiveness of 33 varieties of potatoes.

(b.) A series of experiments on the growth of potatoes with various mannres.

(c.) The raising of new varieties of potatoes from the seed of the potato apple.

II.—*At the Munster Agricultural and Dairy School.*

(d.) A series of experiments on the comparative productiveness of 82 varieties of potatoes.

(e.) Experiments on various manures in potato cultivation.

III.—*At the ordinary Agricultural Schools and School Gardens.*

(f.) The raising of new varieties of potatoes from the seed of the potato apple.

I.—*The Albert Institution.*—(a.) I append hereto a Table showing the yield per acre of the different varieties grown upon this farm. The yield, upon the whole, is low as compared with 1880 and 1881, and the results are confirmatory of previous experiences, that a few varieties stand prominently forward as yielding considerably higher produce than others. A new variety, the Reading Hero, gives the largest yield of marketable potatoes, viz., 7 ton, 19 cwt. 3 qrs. per acre. In England this variety is highly spoken of for its high yield during the present season. Next in order came the White Rocks, 7 ton, 16 cwt. 3 qrs.; Scotch Champion, 7 ton, 7 cwt., 2 qrs.; imported Scotch Kemp, 6 ton, 13 cwt., and Magnum Bonum, 6 ton, 11 cwt. 3 qrs.

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The average yield of the 33 varieties was 5 ton 14 cwt. per statute acre.

The average yield of a number of varieties grown at this farm during the years 1880-81 and 1882 was—

1880.	1881.	1882.
10 tons 10 cwt. per acre.	9 tons 10 cwt. per acre.	5 tons 14 cwt. per acre.

The potatoes in the experiments here noted were planted on the 17th of February, manured with 20 tons farmyard manure per acre. They were raised on the 20th September; three new varieties of seedling potatoes sent for the purposes of these experiments by the late Chief Secretary for Ireland, did not produce any striking results. They will be included in the experiments of next year, when a development of better qualities may be observed.

(B.) I send Tables of the results of the experiments on manures instituted by Dr. Cameron, whose Report of Analysis, &c. is annexed.

The results here are very interesting, and serve to confirm previous experience of the value of potash in increasing the yield of potatoes. The Table will show the cost of the various applications of manures.

These experiments were carried out on a portion of our experimental ground, selected because of its state of exhaustion. This may be seen from the very small produce, 2 ton, 17 cwt. 2 qrs. per acre, of the plot unmanured. A dressing of Kainit, 6 cwt. per statute acre, raised the produce to 4 ton, 13 cwt.; the manure costing 14 *s.* 6 *d.* per acre.

As regards the proportion of diseased potatoes resulting from the experiments upon the different manures, I may say the experience of previous years is not quite supported; in fact, in some cases the deduction of other years are at variance with this year's results; *e. g.*, Kainit shows a diseased produce of 7 per cent.; no manure, a diseased produce of 8 per cent.; whilst sulphate of ammonium shows a diseased produce of only 2 per cent.

(C.) In the raising of new varieties we have been fairly successful. I obtained from America some seed guaranteed to have been cross-fertilized, "hybridized," and about thirty separate and distinct varieties have been produced. Many of these promise to develope superior qualities. There are immature potatoes of various colours and shapes, differing also in size. I sent a collection of these to the exhibition of the Royal Dublin Society and Royal Agricultural Society, held at Ball's Bridge recently. They attracted considerable attention. These potatoes will be planted at Glasnevin and Cork, and carefully cultivated until they come to maturity in 1885. The variety resulting from a cross between the "Champion" and the "Bloomer" raised at this Institution is in process of development; it promises to be a useful potato.

II.—*The Munster Agricultural and Dairy School.* On the farm attached to this school, the experiments under the direction of a committee of the County Cork Agricultural Society have been carried out by the agriculturist. These experiments are similar to what were carried out upon the farm last year. I understand that Dr. Sullivan, President of the Queen's College, and Mr. Smyth, the Agriculturist, are engaged on a Report. This Report will be published by the Agricultural Society. I now send Tables showing results of the different experiments. I will forward Dr. Sullivan's Report as soon as it reaches me.

III.—*The ordinary Agricultural Schools and School Gardens.* In the spring of this year I sent to each of the ordinary agricultural schools (71), and to the schools to which school gardens are attached (20), a packet of seed similar to what was sown at Glasnevin. Along with the seed I sent explicit cultural directions. I have since seen almost all of the teachers of these schools; they have taken a lively interest in the matter, and I have no doubt that they will endeavour to co-operate with the Commissioners in the required direction.

It

It may be well to state here the conditions upon which the teachers were asked to assist in these potato experiments. With the sanction of Her Majesty's Treasury, prizes on the following scale will be awarded in 1885.

For the best variety of round potato for table use:

First Prize - - - - - - - - -	£. 10.
Second „ - - - - - - - - -	5.
Third „ - - - - - - - - -	3.

For the best kidney potato for table use:

First Prize - - - - - - - - -	£. 10.
Second „ - - - - - - - - -	5.
Third „ - - - - - - - - -	3.

For the best variety of early potato (the potato to be tested by growth on the farms of the Board of National Education):

First Prize - - - - - - - - -	£. 10.
Second „ - - - - - - - - -	5.
Third „ - - - - - - - - -	3.

For the best variety of potato for cattle feeding:

First Prize - - - - - - - - -	£. 10.
Second „ - - - - - - - - -	5.
Third „ - - - - - - - - -	3.

To the teacher who writes the best essay on growing potatoes from seed, with reports of observations on the different phases of growth, 10 *l.*

I should mention that several of the teachers of these schools labour under considerable disadvantages in carrying out these experiments, as many of their farms are situated in bleak mountainous districts.

The experiment will be an interesting one, and I should hope that it may be productive of some practical good.

I believe that any immediate beneficial results in potato cultivation must be sought for in the raising of new varieties from the seed, and if we can interest in the matter a large number situated in varied circumstances, and show them the mode of procedure, a considerable advance shall have been made. I am sorry to have to state that at many of those schools a failure has resulted this season, owing to the disease having set in at an early period; a fresh start will be made in those by supplying the teachers next spring with more seed.

In conclusion, I may say generally, that deductions of a reliable and practical character in respect of investigations such as we are now engaged in, can only be made after some years of patient inquiry.

At the present time the great purpose to be served, is to ascertain the origin of the cause of the potato disease. Without this knowledge a radical remedy is impossible. I am satisfied that the microscopist must continue to give his aid to the agriculturist. All inquiry at the present time should be in the direction of tracing effect to cause.

In alleviation of the serious consequences resulting from the recurrence of the disease we should continue to make use of the information which we already possess, much of which has come to us by accident, notably the value of some new varieties as disease-resisting kinds.

For the coming year I would beg to suggest that the experiments of this year be continued on a similar scale. They will be—

1st. The experiments on varieties and manures at the Albert Institution, and the raising of new varieties from seed, to which might be added the cross fertilization of varieties for the production of seed here.

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2nd. The continuation of assistance to the County of Cork Agricultural Society, by allowing the use of the Munster Farm and its staff.

3rd. The production and development by the teachers of the ordinary agricultural schools of new varieties from seed. This, of course, will go on as previously arranged.

I am very pleased at being able to report that Dr. Cameron has promised to continue his aid in the direction of those investigations, and that Dr. E. Percival Wright will give us some assistance in the coming year.

I shall ask to be included in the Estimates for the coming year a small sum for the purpose of carrying out more effectively the experiments here noted.

I beg to acknowledge the very valuable assistance afforded by Mr. Clune, agriculturist, and Mr. Gray, gardener, in carrying out the foregoing. Mr. Nolan, an ex-pupil, now an officer of the institution, has also done good service.

I remain, &c.
(signed) *Thomas Carroll*,
Agricultural Superintendent.

The Secretaries, Education Office,
Marlborough-street, Dublin.

DR. CAMERON'S REMARKS.

Kainit alone gave the largest total crop, but the tubers were more watery than the others.

Superphosphate alone gave a good crop, and the tubers containing a large amount of organic matter

The addition of kainit to superphosphate increased the yield total, and of marketable tubers.

Mineral superphosphate and nitrate of soda combined produced the largest crop of marketable tubers (which contained less water than any of the others) and the largest total crop, save in one plot.

The nitrogenous manures (nitrate of soda and sulphate of ammonia), did badly. In most plots their influence appears to be to lessen the action of the inorganic manures.

In plot 1, however, a very good crop is obtained by nitrate of soda and superphosphate.

In plot 13 there are only 1 cwt. less of kainit and 1 cwt. superphosphate as compared with plot 2, yet plot 2 yielded 4 ton 1 cwt. 2 qrs. of tubers, and plot 13 only 2 tons 19 cwt., whilst the latter had 1 cwt. of nitrate of soda in addition to the other manures.

The produce of good tubers is greatly in excess in plot 2.

With the exception that the value of kainit as a manure for potatoes being clearly proved, the results are rather perplexing.

See Table, next page.

ALBERT INSTITUTION, GLASNEVIN.

EXPERIMENTS on MANURES in POTATO CULTIVATION under the Direction of Dr. *Cameron*.

MANURE.	Rate per Statute Acre.	Cost per Acre.	Yield per Statute Acre.				Dry Matter per Cent. in Sound Potatoes.
			Marketable.	Small.	Diseased.	Total.	
	Cwt.	*£. s. d.*	*Tons. cwt. qrs.*	*Tons. cwt. qrs.*	*Tons. cwt. qrs.*	*Tons. cwt. qrs.*	
1. Nitrate of Sodium - Mineral Superphosphate	2 4	1 12 – – 16 –	2 11 0	1 7 2	0 6 2	4 5 0	28·60
		2 8 –					
2. Kainit - - - - Mineral Superphosphate	4 4	– 11 – – 16 –	1 19 0	1 14 0	0 8 2	4 1 2	27 00
		1 7 –					
3. Kainit - - - - Nitrate of Sodium - Sulphate of Ammonia - Mineral Superphosphate	2 1 1 2	– 5 6 – 16 – – 2 – – 8 –	1 19 2	1 12 0	0 2 2	3 14 0	23·12
		1 11 6					
4. Sulphate of Ammonia - Mineral Superphosphate	2 4	2 4 – – 10 –	0 19 2	2 2 2	0 5 2	3 7 2	26·10
		3 – –					
5. Kainit - - - -	6	– 14 6	2 9 2	*lbs.* 2 0 0 14	0 6 2	*lbs.* 4 13 0 14	25.80
6. Superphosphate - -	8	1 12 –	1 5 2	1 19 0	0 1 0	3 5 2	27·04
7. Sulphate of Ammonia -	3	3 6 –	0 7 0	*lbs.* 2 2 2 14	0 1 0	*lbs.* 2 10 2 14	28·12
8. Nitrate of Sodium - -	3	2 8 –	0 6 2	2 2 2	0 0 1	2 9 1	20·94
9. No Manure - - -	–	- -	0 15 2	1 9 2	0 0 2	2 5 2	26·98
10. Kainit - - - - Sulphate of Ammonia - Mineral Superphosphate	3 1 3	– 8 3 1 2 – – 12 –	0 8 0	2 3 0	0 0 1	2 11 1	27 50
		2 2 3					
11. Nitrate of Sodium - -	3	2 8 -	0 2 2	2 0 2	- -	2 8 0	27·00
12. Sulphate of Ammonia -	3	3 6 –	0 8 2	1 18 0	- -	2 6 2	28·00
13. Kainit - - - - Nitrate of Sodium - - Mineral Superphosphate	3 1 3	– 8 3 – 16 – – 12 –	0 8 0	2 11 0	- -	2 19 0	24·30
		1 16 3					
14. No Manure - - -	–	- -	1 3 2	1 9 2	0 4 2	2 17 2	26·90

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ALBERT INSTITUTION, GLASNEVIN.

RESULTS of EXPERIMENTS on the Comparative Yield of Varieties of POTATOES.

	Gross Yield per Statute Acre.				Marketable.				Small.				Diseased.			
	Tons.	*cwt.*	*qr.*	*lbs.*	*Tons.*	*cwt.*	*qr.*	*lbs.*	*Tons.*	*cwt.*	*qr.*	*lbs.*	*Tons.*	*cwt.*	*qr.*	*lbs.*
1. Mitchell's First Early - - - - - -	3	17	1	0	3	0	0	0	0	9	0	0	0	2	1	0
2. Early Vermont - - - - - - -	3	7	3	14	5	0	3	0	0	7	0	14	—			
3. Rector of Woodstock - - - - - -	2	12	0	0	1	19	3	0	0	12	1	0	—			
4. Reading Hero - - - - - - -	10	4	1	0	7	19	2	0	1	13	1	0	0	3	2	0
5. Coldstream Early - - - - - -	2	7	0	0	1	12	1	0	0	12	3	0	0	2	0	0
6. Beauty of Hebron - - - - - -	5	10	1	0	4	14	1	0	1	5	0	0	—			
7. Fluke Kidney - - - - - - -	5	8	1	14	4	13	0	0	0	10	1	14	—			
8. Dalmahoy - - - - - - - -	6	6	0	0	4	16	3	14	1	0	2	14	0	8	2	0
9. Reading Abbey - - - - - - -	5	2	1	14	4	5	2	14	0	3	2	14	0	8	0	14
10. Grampian - - - - - - - -	7	11	3	14	5	2	3	14	1	10	3	14	0	13	0	14
11. Covent Garden Perfection - - - - -	2	17	3	14	1	14	2	0	1	3	1	14	—			
12. Red Skin Flour-ball - - - - - -	5	14	1	14	5	2	2	14	0	9	3	14	0	1	3	14
13. Skerry Blue - - - - - - -	7	4	2	0	4	19	2	14	2	3	0	0	0	1	3	14
14. Veitches Improved Ash-leaved Kidney - - -	2	11	0	14	1	17	2	14	0	13	2	0	—			
15. Mona's Pride - - - - - - -	4	4	0	0	2	9	2	14	1	14	1	14	—			
16. Purple Fortyfold - - - - - -	3	17	3	0	2	6	3	0	1	10	0	14	0	0	3	14
17. Patterson's Victoria - - - - - -	3	4	2	14	4	19	0	14	0	10	1	14	0	9	0	14
13. Schoolmaster - - - - - - -	8	17	3	14	2	8	1	0	1	9	2	14	—			
19. Red Bog Kemp - - - - - - -	5	3	0	14	4	3	0	0	0	14	2	14	0	0	2	0
20. Early Rose - - - - - - -	5	1	2	14	3	7	1	0	1	13	2	0	0	0	3	14
21. Magnum Bonum - - - - - - -	7	0	1	14	0	11	1	14	0	18	0	0	—			
22. Pride of America - - - - - -	4	11	3	14	3	3	0	0	1	5	0	0	0	0	3	14
23. Early Oxford - - - - - - -	6	7	2	14	3	8	3	14	1	15	1	0	0	3	2	8
24. Scotch Down - - - - - - -	6	2	1	0	3	18	2	14	2	3	2	14	—			
25. Snow Flake - - - - - - -	4	14	2	14	3	9	0	14	1	0	1	14	0	5	0	14
26. Scotch Champion - - - - - -	9	0	1	0	7	7	2	14	1	19	0	14	0	2	2	0
27. Rivers Royal Ash-leaved Kidney - - - -	3	10	0	0	2	9	0	0	0	13	0	0	0	5	0	0
28. White Rock - - - - - - -	11	6	2	0	7	16	3	14	1	12	1	0	1	17	1	14
29. Imported Scotch Kemp - - - - -	10	12	1	14	6	13	0	0	1	7	0	0	2	12	1	14
30. Myatt's Ash-leaved Kidney - - - - -	2	5	2	14	1	7	1	0	0	16	0	0	0	2	1	14
31. Flounder - - - - - - - -	8	13	3	14	5	1	0	0	1	7	0	0	2	5	3	14
32. Railway - - - - - - - -	6	8	2	0	6	0	1	0	0	4	3	14	0	3	1	14
33. McCausland's Seedling - - - - -	3	3	3	6	5	2	0	0	1	2	0	0	0	4	3	0

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MUNSTER AGRICULTURAL and DAIRY SCHOOL.

RESULTS of EXPERIMENTS on the Comparative Yield of Varieties of POTATOES.

VARIETY.	Gross Yield per Statute Acre.				Marketable.				Small.				Diseased.			
	Tons	cwts.	qrs.	lbs.	Tons	cwts.	qrs.	lbs.	Tons	cwts.	qrs.	lbs.	Tons	cwts.	qrs.	lbs.
1. Brownell's Beauty	5	0	0	0	4	12	3	0	0	5	2	0	0	1	3	0
2. Beauty of Hebron	6	0	0	0	5	5	0	0	0	12	0	0	0	6	0	0
3. Reading Abbey	4	8	0	0	3	11	0	0	0	9	2	0	0	7	2	0
4. Reading Prolific	5	12	0	0	4	11	0	0	1	0	0	6	0	1	3	0
5. Porter's Excelsior	4	0	1	0	3	3	0	0	1	3	0	0	0	0	1	0
6. Late Rose	6	8	2	0	5	5	0	0	1	3	0	0	0	0	2	0
7. Early	4	9	0	0	3	10	0	0	0	12	0	0	0	7	0	0
8. Triumph	5	6	3	0	4	0	0	0	1	6	0	0	0	0	3	0
9. Early Vermont	5	9	2	0	4	8	0	0	1	1	0	0	0	0	2	6
10. Ruby	4	10	2	0	3	10	0	0	1	0	0	0	0	0	2	0
11. Bresee's Peerless	5	2	0	0	4	3	0	0	0	14	0	0	0	5	0	0
12. Bresee's Bountiful	3	18	2	0	2	17	2	0	1	0	0	0	0	1	0	0
13. Waterloo Kidney	4	0	1	0	3	13	0	0	0	12	2	0	0	6	3	0
14. Striped Don	4	6	2	0	3	6	2	0	1	0	0	0		—		
15. Ash Top Fluke	5	0	2	0	3	10	0	0	1	10	0	0	0	0	2	8
16. Early Ashleaf	5	5	1	0	4	7	0	0	1	0	0	0	0	1	1	0
17. Garibaldi	2	2	1	0	2	0	0	0	0	1	1	0	0	1	0	0
18. Pride of Ontario	5	2	3	0	4	5	0	0	0	17	0	0	0	0	3	0
19. King of Flukes	2	5	3	0	1	10	0	0	1	5	0	0	0	0	3	0
20. Davidson's Surprise	4	0	2	0	2	13	0	0	1	6	2	0	0	1	3	0
21. Grampion	3	11	2	0	2	17	0	0	0	14	2	0		—		
22. Blanchard	5	1	0	0	4	3	0	0	0	17	0	0	0	1	0	0
23. Salmon Kidney	3	14	0	0	2	14	0	0	0	17	2	0	0	2	2	0
24. Fox's Seedling	4	15	0	0	3	2	0	0	1	13	0	0		—		
25. Vicar of Laleham	6	11	0	0	5	5	0	0	1	0	0	0	0	6	0	0
26. Schoolmaster	6	2	2	0	5	0	0	0	1	0	0	0	0	2	2	0
27. Red Fluke	5	2	0	0	4	5	0	0	0	17	0	0		—		
28. Pride of Ontario	5	0	3	0	4	4	0	0	0	10	2	0	0	0	1	0
29. Radstock Beauty	5	17	2	0	2	15	2	0	1	2	3	0		—		
30. Late Portyfald	4	17	0	0	3	11	0	0	1	6	0	0		—		
31. Birbank	5	1	0	0	4	3	0	0	0	15	0	0		—		
32. Washington	3	19	0	0	2	19	0	0	1	0	0	0		—		
33. Prairie Seedling	5	0	0	0	4	0	0	0	0	18	0	0	0	7	0	0
34. Harrison's Early Rose	4	2	0	0	2	12	0	0	1	10	0	0		—		
35. Portyfold	4	5	2	6	3	11	0	0	0	16	0	0	0	1	2	0
36. Red Ashleaf	2	5	2	0	2	0	2	0	0	8	0	0		—		
37. Onieda	4	0	0	0	2	14	0	0	1	12	0	0		—		
38. Wonderful Red	5	4	2	0	5	2	0	0	0	2	2	0		—		
39. Field Ashleaf	5	15	2	–	5	8	2	0	0	7	0	0		—		
40. Wonderful Red Kidney	3	14	2	0	2	12	0	0	1	2	2	0		—		
41. Lye's Favourite	4	0	0	0	2	13	0	0	0	11	0	0	0	10	0	0
42. Early Pearl	16	1	1	0	14	10	0	0	1	1	1	0	0	10	3	0
43. Compton's Surprise	4	6	0	0	3	0	0	0	1	6	0	0	0	3	0	0
44. River's Royal Ashleaf	2	17	2	0	2	1	0	0	0	15	0	0	0	1	2	0
45. Peach Blow	2	19	3	0	1	17	0	0	1	0	0	0	0	2	3	0
46. Purple Kidney	5	0	0	0	4	6	0	0	0	16	0	0	0	4	0	0

VARIETY.	Gross Yield per Statute Acre.				Marketable.				Small.				Diseased.			
	Tons	cwts.	qrs.	lbs.	Tons	cwts.	qrs.	lbs.	Tons	cwts.	qrs.	lbs.	Tons	cwts.	qrs.	lbs.
47. Scotch Blue	4	0	0	0	6	7	0	0	0	11	2	0	0	1	2	0
48. Gloucestershire Kidney	5	2	1	0	4	17	0	0	1	2	3	0	0	2	2	0
49. Brickworth's Beauty	5	5	2	0	4	3	1	0	0	10	2	0	0	2	3	0
50. Black Apple	5	16	3	0	4	12	0	0	0	18	0	0	0	6	3	0
51. Snow Flake	2	4	1	0	2	3	1	0	0	0	0	0	0	0	1	0
52. Brickworth's Victory	5	16	1	0	4	15	0	0	0	17	0	0	0	4	1	0
53. Pride of America	5	11	0	0	4	8	0	0	1	3	0	0	—			
54. American Triumph	4	9	2	0	3	5	2	0	1	0	0	0	0	3	0	0
55. Queen of the Valley	5	0	0	0	4	6	2	0	0	6	2	0	0	10	0	0
56. American Giant	5	18	2	0	5	5	0	0	0	8	0	0	0	7	2	0
57. Late Beauty of Hebron	4	19	2	0	3	8	2	0	1	0	0	0	0	11	0	0
58. American Magnum Bonum	6	9	0	0	4	17	0	0	0	19	0	0	0	18	0	0
59. White Star	7	12	2	0	5	18	0	0	1	16	0	0	0	1	2	0
60. Early Beauty of Hebron	4	9	2	0	3	6	0	0	1	2	2	0	0	1	0	0
61. Early Snowflake	4	10	0	0	6	5	0	0	0	17	0	0	0	17	0	0
62. Alpha	4	5	2	0	3	5	0	0	0	19	0	0	0	1	2	0
63.	6	15	0	0	5	15	0	0	1	0	0	0	—			
64. Pinure	8	1	0	0	6	16	0	0	1	15	0	0	0	8	0	0
65. Brown Rock	5	6	1	0	2	19	2	0	2	0	0	0	0	0	3	0
66. Moray Blue	4	18	2	0	2	13	0	0	1	18	0	0	0	1	2	0
67. Magnum Bonum	5	7	0	0	3	7	0	0	1	19	0	0	0	1	0	0
68. Circassian	2	3	2	0	1	10	2	0	0	6	3	0	0	0	1	3
69. Quarantaine de la halle	3	18	3	0	2	12	2	0	0	19	3	0	0	4	2	0
70. Early White Rough Skin Rose	5	3	0	0	3	8	0	0	1	11	0	0	0	6	3	0
71. Grosse Jaune	4	8	2	0	6	17	0	0	0	11	0	0	0	0	2	0
72. Pousse Debout	3	13	2	0	2	17	2	0	0	10	0	0	0	3	0	0
73. International	3	12	3	0	2	7	2	0	1	4	2	0	0	0	3	0
74. Regent	5	10	6	0	4	11	0	0	0	19	0	0	0	0	3	0
75. Early Rose	5	10	0	0	4	5	3	0	1	8	0	0	0	1	1	0
76. Canadian Prolific	4	0	3	0	3	4	0	0	0	15	0	0	0	1	3	0
77. Brown Black	4	18	0	0	3	0	2	0	1	16	0	0	0	1	2	0
78. American Chili	5	0	3	0	4	10	3	0	0	10	0	0	—			
79. Red Skin Flour-ball	5	15	3	0	4	9	2	0	1	0	1	0	—			
80. Reading Abbey	5	17	2	0	3	15	0	0	2	0	0	0	0	2	2	0
81. Beamishes	4	17	0	0	2	9	0	0	2	7	0	0	0	1	0	0
82.	8	10	0	0	7	0	0	0	1	10	0	0	—			

EXPERIMENTS on MANURES applied to CHAMPION POTATOES.

No manure	2	0	1	20	1	5	2	8	0	19	2	24	0	0	0	16
Kainit, 2 cwt.	3	17	3	12	3	0	2	8	0	18	1	20	0	0	6	12
Kainit, 4 cwt.	4	16	0	16	3	13	2	24	1	1	1	4	0	1	0	16
Dung, 15 tons Kainit, 2 cwt. Raw Phosphate, 2 cwt.	9	1	2	24	6	7	2	8	1	16	0	0	1	1	0	16
Dung, 15 tons Kainit, 2 cwt. Superphosphate, 2 cwt.	8	17	0	16	6	5	3	12	1	12	2	24	1	0	2	8
Dung 30 tons	8	12	0	2	6	8	1	5	1	17	0	16	0	6	2	8
Dung, 15 tons Kainit, 2 cwt.	8	18	0	18	6	18	3	12	1	14	1	20	0	8	3	12
Dung, 15 tons Superphosphate, 2 cwt.	9	16	3	12	7	7	0	18	2	2	2	24	0	7	0	0

DIRECTIONS FOR SOWING SEED.

IN order to hasten the germination of the seed, it should be sown in flower-pots or in boxes; these vessels should be "plunged," *i.e.*, sunk into the earth on a hot-bed so as to have a "gentle bottom heat."

The hot-bed should be made up of fresh manure, the greater portion being stable manure. It should stand some days before it is covered with earth, so as to allow the strong gases of fermentation to pass away. These gases, or the strong heat of a newly made hot-bed, would be fatal to the seedlings. When the hot-bed has settled down it should be covered on top with earth to the depth of six inches. When the temperature of the bed has lowered to about 70 degrees, the pots or boxes may be plunged in the earth covering. In the absence of a thermometer the heat may be roughly gauged by having a stick thrust into the hot-bed. The stick should be pulled out occasionally, and that part which was in the hot-bed grasped by the hand, so as to ascertain the temperature.

The seed should be sown about the middle of April, thinly, in the pots or boxes. The soil should be light. Cover the seed lightly with fine, light soil, and give a slight watering. Then place the pots or boxes, as already directed, in the hot-bed.

If you have not a "frame" over the hot-bed, the pot or box should be covered with a sheet of glass so as to preserve, as much as possible, a moist atmosphere for the seedlings. Shading against sunlight must be provided until the plants come into second leaf, when the glass may be dispensed with, and the plants should then have all the light possible. On cold days, and all nights until danger from frost is over, the hot-bed should be shaded by matting or other covering. The object to be attained is the keeping up of an equable, rather warm temperature.

As soon as the young plants are well grown, and in danger from over-crowding, they should (when danger from frost is over) be transplanted into the open ground in drills two feet apart, and one foot between the plants in the drills. The summer treatment is the same as for the ordinary potato crop.

In the autumn of 1883, the worthless varieties may be thrown away, the most promising tubers being preserved.

It would be advisable at this time to make a classification of varieties, which should be most carefully stored for planting in the spring of 1884.

In the autumn of 1884, another sorting should take place, worthless varieties rejected, and a careful selection and separation made of what may be considered good varieties; again, careful storing during the winter should be attended to.

In the spring of 1885, the different varieties should be planted separately in drills. Notes should be made during summer of their habits of growth, *i.e.*, whether tall or dwarf, colour of foliage and bloom, period of blooming, if attacked by disease or other abnormal affection, and as far as possible, some record should be made of the relative productiveness of the varieties.

Further instructions for preparing for exhibition will be given in due time, and if you should require any explanation of the foregoing or other instruction it will be afforded to you on application to this office.

418.

POTATO CULTURE (IRELAND).

COPY of Reports furnished with regard to Experiments on Potato Culture made in *Ireland* during the Year 1882; also on any Experiments contemplated for 1883

(*Colonel Nolan.*)

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